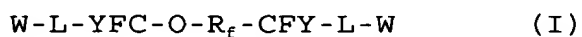


## CLAIMS

1. Use for improving the hydro- and oil-repellence properties of substrata with a low surface energy having a critical wetting tension lower than 40 mN/meter, of (per)fluoro-polyether mono- and bifunctional derivatives having the following structures:



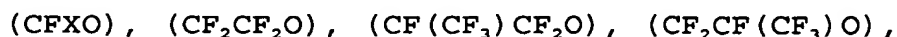
wherein:

L is a linking organic group  $-CO-NR'-(CH_2)_q-$ , with  $R'=H$  or  $C_1-C_4$  alkyl;  $q$  is an integer comprised between 1 and 8, preferably 1-3;

$Y=F, CF_3$ ;

W is a  $-Si(R_1)_\alpha(OR_2)_{3-\alpha}$  group with  $\alpha=0,1,2$ ,  $R_1$  and  $R_2$  equal to or different from each other are  $C_1-C_6$  alkyl groups, optionally containing one or more ether O,  $C_6-C_{10}$  aryl groups,  $C_7-C_{12}$  alkyl-aryls or aryl-alkyls;

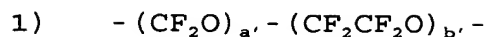
$R_f$  has a number average molecular weight in the range 200-5,000, preferably 300-2,000 and it comprises repeating units having at least one of the following structures, statistically placed along the chain:



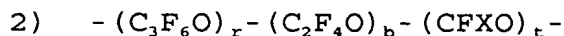
wherein  $X = F, CF_3$ .

2. Use according to claim 1, wherein  $R_f$  has one of the follo-

wing structures:

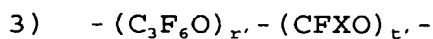


with  $a'/b'$  comprised between 0.5 and 2, extremes included,  $a'$  and  $b'$  being integers such to give the above mentioned molecular weight;



with  $r/b = 0.5-2.0$ ;  $(r+b)/t$  is in the range 10-30,

$b$ ,  $r$  and  $t$  being integers such as to give the above mentioned molecular weight,  $X$  has the above indicated meaning;



$t'$  can be 0;

when  $t'$  is different from 0 then  $r'/t' = 10-30$ ,

$r'$  and  $t'$  being integers such to give the above mentioned molecular weight;  $X$  has the above indicated meaning;

3. Use according to claims 1-2, wherein in structure (II) the other end group is of T-O- type, wherein T is a (per)fluoroalkyl group selected from:  $-\text{CF}_3$ ,  $-\text{C}_2\text{F}_5$ ,  $-\text{C}_3\text{F}_7$ ,  $-\text{CF}_2\text{Cl}$ ,  $-\text{C}_2\text{F}_4\text{Cl}$ ,  $-\text{C}_3\text{F}_6\text{Cl}$ ; optionally one or two F atoms, preferably one, can be replaced by H.
4. Use according to claims 1-3, wherein the compounds (I) and (II) are used in mixture.
5. Use according to claims 1-4, wherein the perfluoropolyether derivatives have formula (I) with  $R_f$  having structure

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re (3).

6. Use according to claims 1-5, wherein the substrata having a low surface energy are selected from the groups consisting of:

polytetrafluoroethylene, polyolefins, polyolefine elastomers, thermoplastic copolymers of tetrafluoroethylene, thermoplastic homopolymers and copolymers of vinylidenefluoride or of chlorotrifluoroethylene.

7. Use according to claims 1-6, wherein the (per)fluoropolyether derivatives are applied on the substrata by brushing, spraying, padding.

8. Use according to claims 1-7, wherein the (per)fluoropolyether derivatives are used in formulations comprising solvents or water/solvent mixtures.

9. Use according to claim 8, wherein the solvents are polar and are selected from the following classes:

aliphatic alcohols having from 1 to 6 carbon atoms; aliphatic glycols having from 2 to 8 carbon atoms, optionally having an esterified hydroxyl; ketones or esters having from 3 to 10 carbon atoms.

10. Use according to claims 8-9, wherein as water/solvent mixtures, ketone/water or alcohol/water mixtures in a ratio by volume between 10:90 and 90:10 are used.

11. Use according to claims 8-10, wherein in the formulations

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the concentration of the (per)fluoropolyethers of formula (I) and (II) is generally in the range 0.1-30% by weight.

12. Use according to claims 1-11, wherein the amount of (per)-fluoropolyether compound applied on the substratum surface is in the range 0.1-20 g/m<sup>2</sup>.
13. Use according to claims 1-12, wherein the polar solvent is combined with water, optionally in the presence of a silanization catalyst.
14. Use according to claims 1-12, wherein a thermal treatment cycle to favour the crosslinking is used.

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